It bears on every page evidence of competent knowledge, very broad reading and deep reflection.

There are only seven chapters in the book of nearly three hundred pages. The first one is devoted to "Form, Growth and Change," beginning with an examination of the structure, both external and internal, of the adult insect. His second chapter is entitled "The Open Type of Wing Growth," using this term to characterize those insects which have incomplete metamorphosis. The next chapter is devoted to "The Hidden Type of Wing Growth," in which he makes a careful and full exposition of the structure in different stages of those insects which have complete metamorphosis and therefore in which the wing growth is hidden in the larval form. Another chapter treats of "Some Wingless Insects." Then comes a fascinating and very full chapter, covering nearly sixty pages, on "Growing Insects and Their Surroundings," a condensed insect ecology of great value and admirably done.

The last chapter is devoted to "The Problems of Transformation," in which he contrasts the transformations of insects and the changes which other animals undergo in the course of their development, considering the primitive type of insect larva, the two types of wing growth, and the history of the insect orders as revealed by the rocks.

In the earlier chapters it will be seen that the author gives an account of the growth and transformation of the insects of the different orders, showing especially the astounding variations among the early stages, particularly the larvae. The excellent and extensive ecological chapter "On the Surroundings of Growing Insects" follows most naturally; while in the final chapter, with equal happiness of arrangement, he really considers the meaning of the facts described in the earlier pages.

Prepared in this way and by a thoroughly competent man, this attractive, well printed, and very well illustrated book will find its readers not only among the entomologists but among those interested in biology in a broad way.

L. O. HOWARD

RESEARCH FUNDS IN THE UNITED STATES

IN the Bulletin of the National Research Council for March, 1921, Callie Hull has compiled information on the funds available in the United States in 1920 for scientific research. This is the first compilation of its kind, and readers of SCIENCE will be interested in seeing a brief summary of the contents of this paper. The following review of these statistics can not be considered absolutely accurate. In some cases it is difficult to judge of the application of some arbitrary rules that had to be adopted in order to make the tables brief. I am satisfied, however, that the tables are essentially reliable, and that if absolutely correct figures could be obtained in every case, no great variation from the figures here given would result.

Annual incomes from funds for scientific research in the United States, which have been set aside by private individuals or corporations, range in amounts from less than $25.00 to more than $10,000,000. It is interesting to note the distribution over our land of the institutions that dispense these funds. Most of them are on the Atlantic coast, from Connecticut to South Carolina. The principal centers are Boston, New York and Washington. There is a broad belt of smaller centers extending from the Atlantic westward through the northern states to beyond the Mississippi. On the Pacific coast we find a center in and around San Francisco. Very few research funds have been established in the states lying on the high plains and plateaus of the west, where culture is recent, or in the southern states, where there is as yet relatively little centralization of wealth.

Funds of this kind have been established only in 26 states. Of these, New York ranks first and North Dakota last. In the amount of established funds the rank of these states is as follows: (1) New York, (2) Massachusetts, (3) Illinois, (4) California, (5) Maryland, (6) Pennsylvania, (7) Minnesota, (8) New Jersey, (9) Iowa, (10) Connecticut, (11) Ohio, (12) Kansas, (13) Utah, (14) Wisconsin, (15) Indiana, (16) Michigan, (17) Missouri, (18) Alabama, (19) Washington, (20) Texas, (21) Rhode Island, (22) Idaho, (23)

	Number of funds
Yielding income annually of more than $1,000,000	3
Yielding income annually of $1,000,000–$100,001	7
Yielding income annually of $100,000–$10,001	67
Yielding income annually of $10,000–$1,001	150
Yielding income annually of $1,000–$101	298
Yielding income annually of $100 or less	40*
	565

* Many of the smaller funds in the last two items are research scholarships in various universities.

Virginia, (24) North Carolina, (25) Arizona, (26) North Dakota. The District of Columbia ranks next to New York.

There are in all some 565 funds available for research in our country, and these may be classified according to size, as in the above table:

The donations made for such funds have greatly increased during the last twenty years, as will be seen from the following table:

Period covered	No. of new funds established in each period	Annual yield
Up to 1800	3	$ 1,000
1800 to 1850	3	$ 50,000
1851 to 1870	4	$ 5,000
1871 to 1880	5	$ 60,000
1881 to 1890	17	$ 40,000
1891 to 1900	44	$ 166,000
1901 to 1910	65	$ 1,275,000
1911 to 1921	175	$17,000,000*

*The Rockefeller Foundation, which is included in this last amount, yields nearly five times the amount of all other funds so far established.

It is interesting to note that out of the great number of people of large means in our nation, no less than five hundred, in round numbers, have been sufficiently interested in the advancement of scientific research to make donations for its maintenance; and that of these five hundred individuals, it is a mere score of men that has furnished by far the larger part of the money available for such purposes. Among these we note Smithson, Rockefeller and Carnegie, two of whom are known as among the wealthiest men in our nation.

Though it appears that most donators have provided that the gifts they have made should be used in some particular branch of research, nevertheless by far the largest bequests have been given to research in general; that is, the selection of the particular work to be done has been left to those in trust of the funds. The following table will emphasize these points:

Branch of research specified by donor	Number of funds established	Annual yield
General research work	125	$17,000,000
Medicine	135	$ 4,000,000
Biology and natural history	35	$ 352,000
Physics	34	$ 241,000
Astronomy	22	$ 173,000
Geology	15	$ 137,000
Archeology and anthropology	24	$ 117,000
Botany	14	$ 100,000
Chemistry	65	$ 78,000
Engineering	31	$ 55,000
Zoology	9	$ 49,000
Industrial research	34	$ 49,000
Psychology	8	$ 29,000
Mathematics	3	$ 2,600

It will be noted that medical research heads the list, with 135 established funds and an annual income of $4,000,000. This is doubtless because medical knowledge is generally recognized as of the greatest practical importance to the welfare of mankind. Mathematics brings up the rear. It would probably appear to most of us to be the subject farthest removed from practical interests. Biology, which ranks second, has much to do with the procuring of food; and Psychology, which ranks next to the last, is not yet generally recognized as a subject of practical application.

Copies of the paper here reviewed can no doubt be secured from The National Research Council, 1701 Massachusetts Ave., Washington, D. C.

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